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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/073,848	02/11/2002	Jorg-Achim Fischer	HK-643	6630

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EXAMINER	
PHAM, HAI CHI	
ART UNIT	**PAPER NUMBER**
2861	

DATE MAILED: 03/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/073,848	FISCHER ET AL.	
	Examiner	Art Unit	
	Hai C. Pham	2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-22 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-10 and 12-22 is/are rejected.

7)☒ Claim(s) 11 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 11 February 2002 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 02/11/02, 03/21/02.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-4, 6, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sunagawa (U.S. 6,466,359) in view of Minakuchi et al. (U.S. 6,011,250).

Sunagawa discloses a multi-beam exposure apparatus comprising a plurality of fiber exits for providing laser beams (fiber array 30 having a plurality of optic fibers 22a-22i whose exit end faces are facing the deflection portion 18) (Fig. 4A), said fiber exits having first alignment devices (support plate 29 for aligning the exit ends of the optic fibers in the sub-scanning direction) (col. 7, lines 22-41), a beam control device (e.g., deflecting portion 18 such as AOD or AOM) (col. 9, lines 36-52) configured to perform at least one operation selected from the group consisting of interrupting the laser beams emerging from said fiber exits, deflecting the laser beams emerging from said fiber exits and modulating an intensity of the laser beams emerging from said fiber exits in order to

provide a multi-spot array with image points on the photosensitive material (the laser beams being deflected by the AOD or AOM to be image in specified spots on the surface of the drum 32) (col. 9, lines 15-35).

Sunagawa fails to teach a mount having a plurality of holders for in each case a respective one of said fiber exits, said mount having second alignment devices complementary to said first alignment devices, and the fiber exits having a respective desired position and having a substantially identical angular alignment in relation to the respective desired position when said first alignment devices of all of said fiber exits and said second alignment devices of said mount are one of aligned and mutually engaged.

Minakuchi et al. discloses a multi-beam scanning device comprising a plurality of fiber exits (321-328, Fig. 10) for providing laser beams, a mount (alignment block 330) having a plurality of holders (grooves 337) for in each case a respective one of said fiber exits, said mount having second alignment devices (pressing plate 339) complementary to said first alignment devices (alignment portion 333) (Fig. 11), the exit ends of the fibers having a respective desired position and having a substantially identical angular alignment in relation to the respective desired position when said first alignment devices and said second alignment devices are mutually engaged (Fig. 13).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the device of Sunagawa with a mount as taught by Minakuchi et al. The motivation for doing so would have been to allow the exit ends of the fibers to be proper aligned so as to obtain the desired print resolution.

With regard to claims 2-3, Sunagawa further teaches the recording material A being any of the various well known recording materials including printing plates and photon sensitive recording material (col. 8, line 63 to col. 9, line 13).

Sunagawa also teaches:

- said beam control device includes correction devices (e.g., AOD, AOM 18) for displacing individual ones of the image points of the multi-spot array, said correction devices deflect the laser beams electronically in a direction perpendicular to an axis extending through the desired position of given ones of the image points (the laser beams being deflected by the AOM device 18 perpendicular to the array direction of the laser beams) (Fig. 6).
- said beam control device includes a plurality of acousto-optical modulators (e.g., multi-channel acousto-optical deflector 42) disposed between said fiber exits and the photosensitive material (Fig. 4B).

4. Claims 5, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sunagawa in view of Minakuchi et al., as applied to claims 1, 6 above, and further in view of Gross (U.S. 5,309,178).

Sunagawa, as modified by Minakuchi et al., discloses all the basic limitations of the claimed invention except for the correction devices electronically delay a respective time of incidence of the laser beams on the photosensitive material for displacing individual ones of the image points of the multi-spot array on the photosensitive material

in a given direction parallel to a direction of a relative movement between said fiber exits and the photosensitive material.

Gross discloses a laser writing apparatus comprising a multi-channel acoustic modulator (20), wherein a delay generator circuitry (62) is provided to each channel for correcting the spatial distortion of the laser writing apparatus, the delay generator inserting appropriate relative delays between the various channels so as to image the recording medium with straight pixel arrangement (col. 5, lines 43-59) (Figs. 1B-1B, 5A-5C).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the delay generator into the device of Sunagawa as taught by Gross. The motivation for doing so would have been to correct for the dislocation of the image dots on the surface of the recording material.

5. Claims 8, 14-15, 17, 19, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sunagawa in view of Minakuchi et al., as applied to claim 1 above, and further in view of Jürgensen (U.S. 6,888,853).

Sunagawa, as modified by Minakuchi et al., discloses all the basic limitations of the claimed invention except for the beam control device controlling the laser beams such that a converging fan of beams is formed, reducing the distances of the image points.

Jürgensen discloses a multi-beam scanning device for processing material on a processing surface of a printing form, the device including plural fiber lasers, a multi-

channel acousto-optical modulator (34) for modulating and deflecting the laser beams, and an imaging lens (165) for focusing the laser beams on the rotating drum by forming a converging fan of beams (Fig. 36a).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Sunagawa with the aforementioned teaching of Jürgensen. The motivation for doing so would have been to form a sharp image with smaller spacing between the dots.

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sunagawa in view of Minakuchi et al., as applied to claim 1 above, and further in view of Figov et al. (WO 97/27065).

Sunagawa, as modified by Minakuchi et al., discloses all the basic limitations of the claimed invention except for the optical system for imaging said fiber exits telecentrically onto the photosensitive material.

Figov et al. discloses a printing system including a plurality of optical fibers coupled laser diodes whose beams are imaged by a telecentric lens assembly (35) onto the surface of the printing material (25) at the desired positions and sizes (see abstract).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide a telecentric lens assembly to the device of Sunagawa as taught by Figov et al. The motivation for doing so would have been to be able to obtain dots at précised positions and with desired sizes independent of the distance between the exit end of the optical fibers and the printing plate.

7. Claims 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sunagawa in view of Minakuchi et al., as applied to claim 1 above, and further in view of Hirabayashi et al. (U.S. 6,595,697).

Sunagawa, as modified by Minakuchi et al., discloses all the basic limitations of the claimed invention except for the first alignment devices of said fiber exits each including a radially projecting element, and the first and second alignment devices including respective markings.

Hirabayashi et al. discloses an optical fiber coupling device including a ferrule for supporting an end of the optical fiber, a holder (30) having a flange on its outer periphery, a collar member (40) having positioning groove or mark relative to the holder for adjusting the angle of rotation of the optical fiber about its axis (col. 12, lines 20-31).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Sunagawa with the aforementioned teaching of Hirabayashi et al. The motivation for doing so would have been to align the angle of the plane polarization of the optical fiber.

8. Claims 16, 18, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sunagawa in view of Minakuchi et al. and Jürgensen, as applied to claims 14, 19 above, and further in view of Gross.

Sunagawa, as modified by Minakuchi et al. and Jürgensen, discloses all the basic limitations of the claimed invention except for delaying a time of incidence of the laser beams on the photosensitive material.

Gross discloses a laser writing apparatus comprising a multi-channel acoustic modulator (20), wherein a delay generator circuitry (62) is provided to each channel for correcting the spatial distortion of the laser writing apparatus, the delay generator inserting appropriate relative delays between the various channels so as to image the recording medium with straight pixel arrangement (col. 5, lines 43-59) (Figs. 1B-1B, 5A-5C).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the delay generator into the device of Sunagawa as taught by Gross. The motivation for doing so would have been to correct for the dislocation of the image dots on the surface of the recording material.

9. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sunagawa in view of Minakuchi et al. and Jürgensen, as applied to claims 14, 19 above, and further in view of Hirabayashi et al.

Sunagawa, as modified by Minakuchi et al. and Jürgensen, discloses all the basic limitations of the claimed invention except for the angular alignment adjustment device.

Hirabayashi et al. discloses an optical fiber coupling device including a ferrule for supporting an end of the optical fiber, a holder (30) having a flange on its outer

periphery, a collar member (40) having positioning groove or mark relative to the holder for adjusting the angle of rotation of the optical fiber about its axis (col. 12, lines 20-31).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Sunagawa with the aforementioned teaching of Hirabayashi et al. The motivation for doing so would have been to align the angle of the plane polarization of the optical fiber.

Allowable Subject Matter

10. Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter: the primary reason for the indication of the allowability of claim 11 is the inclusion therein, in combination as currently claimed, of the limitations "a capillary tube provided between said fiber optic conductor and said collimator lens", "a bush surrounding said capillary tube" and "said radially projecting element is fixed on said bush and projects beyond said bush", which are not found taught by the prior art of record considered alone or in combination.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hai Chi Pham

HAI PHAM
PRIMARY EXAMINER
March 15, 2006